CSS-06-3147

CALIBRATION STANDARD REQUIREMENT

FOR A

CAPACITANCE MANOMETER READOUT

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PROCUREMENT PACKAGE

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Code MS-33
Corona, CA 91718-5000

December 1994
Encl (1)

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CAPACITANCE MANOMETER READOUT

1. SCOPE

1.1 Scope. This requirement defines the mechanical, electrical, and electronic characteristics for a Capacitance Manometer Readout. This equipment is intended to be used by Navy personnel in shorebased laboratories to calibrate low pressure and vacuum instrumentation. For the purposes of this requirement, the Capacitance Manometer Readout shall be referred to as the CMR.

2. APPLICABLE DOCUMENTS

2.1 Controlling Specifications. MIL-T-28800, “Military Specification, Test Equipment for use with Electrical and Electronic Equipment, General Specification for,” and all documents referenced therein of the issues in effect on the date of this solicitation shall form a part of this requirement.

3. REQUIREMENTS

3.1 General. The CMR shall conform to the Type II, Class 5, Style E requirements as specified in MIL-T-28800 for Navy shipboard and shorebased use as modified below. The use of material restricted for Navy use shall be governed by MIL-T-28800.

3.1.1 Design and Construction. The CMR design and construction shall meet the requirements of MIL-T-28800 for Type II equipment.

3.1.2 Power Requirements. The CMR shall operate from a source of 103.5V to 126.5V at 50 Hz and 60 Hz ±5% single-phase, 10 Amp input power.

3.1.2.1 Fuses or Circuit Breakers. Fuses or circuit breakers shall be provided. If circuit breakers are used, both sides of the power source shall be automatically disconnected from the equipment in the event of excessive current. If fuses are used, only the line side of the input power line, as defined by MIL-C-28777, shall be fused. Fuses or circuit breakers shall be readily accessible.

3.1.2.2 Power Connection. The requirements for power source connections shall be in accordance with MIL-T-28800 with a 6-foot minimum length cord.

3.1.3 Dimensions and Weight. The overall dimensions of the CMR shall be consistent with good design practices; however, the CMR weight shall not exceed 10 pounds.

3.1.4 Lithium Batteries. Per MIL-T-28800, lithium batteries are prohibited without prior authorization. A request for approval for the use of lithium batteries, including those encapsulated in integrated circuits, shall be submitted to the procuring activity at the time of submission of proposals. Approval shall apply only to the specific model proposed.

3.2 Environmental Requirements. The CMR shall meet the environmental requirements for a Type II, Class 5, Style E equipment with the deviations specified below.

3.2.1 Temperature and Humidity. The CMR shall meet the conditions below:

	Temperature(°C)	Relative Humidity(%)
Operating	10 to 30	95
	30 to 40	75
Non-operating	-40 to 70	Not Controlled

3.2.2 Electromagnetic Compatibility. The electromagnetic compatibility requirements of MIL-T-28800 are limited to the following areas: CE01, CE03, CS01, CS02, CS06, RE01, RE02 (14 kHz to 1 Ghz), and RS03.

3.3 Reliability. Type II reliability requirements are as specified in MIL-T-28800.

3.3.1 Calibration Interval. The CMR shall have an 85% or greater probability of remaining within tolerances of all specifications at the end of a 12 month period.

3.4 Maintainability. The CMR shall meet the Type II maintainability requirements as specified in MIL-T-28800 except the lowest discrete component shall be defined as a replaceable assembly. Certification time shall not exceed 60 minutes.

3.5 Performance Requirements. The CMR shall provide the following capability as specified below. Unless otherwise indicated, all specifications shall be met following a 30-minute warm-up period.

3.5.1 Ranges. The CMR shall have ranges of x1, x0.l, x0.01 of sensor Full Scale.

3.5.2 Analog Output Range. The CMRs analog output range shall be 0 to ± 10 VDC on each range, into greater than 10K ohm load.

3.5.3 Output Impedance. The CMRs output impedance shall be less than 1 ohm.

3.5.4 Output Linearity. The CMRs output linearity shall be a minimum of ± (0.005% Reading +0.001% Full Scale).

3.5.5 Output Noise. The CMR shall have a maximum output noise of 70 mVolts at 0.4 Hz bandwidth. The CMR shall have a maximum output noise of 4 mVolts peak-to-peak in the range of 1kHz to 1 MHz.

3.5.6 Output Zero Drift. The CMRs output zero drift shall be less than 0.05 mVolts/^{O}C.

3.5.7 BCD Output. The CMR shall have a BCD output of parallel line 3-state logic; decimal point and range ID are buffered TTL levels; all outputs can drive one TTL load.

3.5.8 Units Selection Switch. The CMR shall have a unit selection switch for displaying pressure in mmHg, millibars, kilopascal, In Hg, cmH_2O, psi, or In H_2O.

3.6 Operating Requirements. The CMR shall provide the following capabilities.

3.6.1 Display. The CMR shall have a display of 5-1/2 digits.

3.6.1.1 Display Accuracy. The CMR shall have a display accuracy of ± 0.001% reading ± 1 count.

3.6.1.2 Display Update Rate. The CMR shall provide an update rate of at least 1 reading per second.

3.7 Compatibility Requirements. The CMR shall be compatible with the Baraton 600 series sensors.

3.8 Manual. At least two copies of an operation and maintenance manual shall be provided. The manual shall meet the requirements of MIL-M-7298.

3.8.1 Calibration Procedure. A calibration procedure inaccordance with MIL-M-38793 shall be provided.